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EDUCATION AND INDUSTRIAL PEACE

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Frankenstein

About a century ago Lord Byron, Shelley and Mrs. Shelley pulled through a season of bad weather in Switzerland by making and telling one another gruesome stories. And they talked also of the new theories of Evolution. So Mrs. Shelley let her mind run riot with speculations on the nature of life and devised the story of Frankenstein. Frankenstein was a young man obsessed with an amazing zeal for scientific discovery, and one day he discovered the secret of life. Then he laboriously put bones and sinew together and made a man. But when he injected his life-giving fluid into it, it arose a hideous thing of brute strength. Subsequently it destroyed Frankenstein's little brother, his best friend, his wife, his father, then Frankenstein and finally itself. The story has lived a century not because it is well written nor because it is unlike the ordinary, but because it fits recurring human experience.

The Frankenstein System

The story of Frankenstein means that a little science is a dangerous thing; it means too that an isolated science is a positive menace. Man has a tendency to bigness in construction upon slackly-scanned footings or upon one well built but isolated pillar. And once he has constructed and the structure begins to wobble, he scurries about to patch up with makeshifts and expedients, which latter make but little for additional strength and much for complexity. And next the expedient, which usually has been put in place by the specialist or the opportunist as the salvation of the tottering structure, appears to the panicky as the real pillar. Some there be who advocate putty for the cracks and a fresh coat of paint, to restore public confidence; usually they have putty and paint for sale. Again a few—a very few—quietly insist that if the structure is to be saved, there is only one way to save it—to get each column down to bed rock. This

will cost much, it will take time, it will require careful investigation, it will cause inconvenience—and usually it ends by the specialist or the opportunist putting in another prop. Both those who own the structure and those who toil within are in a condition of unrest and apprehension; while outside are the house-doctors—the politicians, the scientific management experts, the pedagogues, the financiers—each putting up his prop. Props cost money, particularly the specialist's prop. The maintenance cost of the structure increases, the rents go up and finally the burden of propping goes to the shoulders of those who work within. Some day, despite the props, the structure collapses; Frankenstein is destroyed by the Thing he built. And those who survive begin to build anew.

Education and the Frankenstein System

In this year of grace, our commercial and industrial edifice shows signs of strains—of unevenly distributed loads. The proppers have been propping, and plenty of putty and paint have been applied; but to little avail. And now Industry has sent up a Macedonian cry for help to education. The appeal, made first to the public school, has been passed up to the university. This is right, because, strangely enough, the university has had much to do with bringing about present conditions. For, in the name of science, the university has furnished the material with which modern industrialism has been built. Our laboratories have been humming for a hundred years discovering, combining and inventing in chemistry, biology, physics and economics—why? The answer is so easy: To benefit man, to elevate him, to insure human progress.

Well, have we done it? The answer is not so easy and must rest on this: If we have added to the mental, moral and physical advancement of those who work, yes; if not, no. But, it will be argued, we have discovered scientific truth—that is our function; if others have misapplied it, we are absolved. Are we,—the University? If we have placed powerful tools in men's hands without teaching them how to use them wisely, have we done our whole and obvious duty? Let us see if we have. Let us consider if the work which man does to-day and the conditions under which he does it, make for his mental, moral and physical advancement, for these are the real results to humanity of our century of effort. If, for example, it is true that England is anemic, nervous, losing its self-control and incapable of sustained

resistance, and if this is the result of the unwise use of the science which has made its modern industrialism, what shall be the merit of the universities which furnished the powerful tools but not the men to use them safely? If they furnished the men, then why the sick condition of England? Have the schools trained bed-rock diggers or have they trained proppers? By all means, let us analyze this thing we call work, for obviously we shall have to heed the Macedonian cry whether we want to or not.

Work and Unrest

The basic object of work is the same as it was in the stone age—to obtain food and shelter. Work is the fight for self-preservation and self-perpetuation; the strategy of the fight furnished and still furnishes the stimulus for brain growth. The mental exercise derived from devising a stone hatchet or a crude animal trap had as great a mind-building value as has the construction of a bank safe or of a modern factory. In the stone age the immediate problem was to get and to protect; both were accomplished by physical strength mainly, by cunning partly. To-day the immediate problem is the same, but we call our problem of getting, "industry and commerce," and our problem of protection, "government." When, in paleolithic days, Mr. Strongarm emerged in the dawn from his cave with a healthy appetite and saw Mr. Smallbones down the path carrying a flank of deer meat, it was strictly in accordance with the then law for Strongarm to use the superior physical might which nature gave him, to take his breakfast from Smallbones. This developed cunning in Smallbones. To-day it is contrary to law for the burly one to stop Smallbones on the sidewalk and abstract his pocket-book; besides Smallbones may have a knife or a revolver, the product of the cunning of generation upon generation of Smallbones. In fact, the cunning Smallbones now has his breakfast produced for him by the brawnier Strongarm. It is strictly in accordance with the present law for Smallbones to use the superior mental might which nature gave him to get his breakfast from Strongarm.

All changes of law, or government, if you wish, have come when Strongarm or Smallbones, which ever happened to be the exploited one, was not left enough breakfast by the exploiting one. When government ceases to protect the weak, the weak, curiously enough, get strong and change the government; sometimes also the strong

get weak from too much breakfast and not enough work. When we shall reach a condition of stable equilibrium of work and breakfast for both Strongarm and Smallbones we shall have the millenium and industrial peace, and not before.

Now it is not improbable that one day Smallbones by his cunning devised an animal trap which would get as much meat in a day as the stone hatchet could kill in a month. Further, it was less hazardous than the old method of personal attack. But to construct it required the brawn of Strongarm. So the first partnership was formed with Smallbones as general manager, because his was the directing thought, and with Strongarm as the workingman, because his was the constructing muscle. It is not improbable, too, that when the first killing was made, the first labor trouble started over the division of the profits. What was Smallbones' share? His thought produced as much in one day as was formerly produced in thirty days. What was Strongarm's share? He sweated and toiled to build the new industry while Smallbones sat in the shade and thought. Of course, we know the question was not settled, for we still have it with us. It is one of the elements in our industrial unrest.

But even after some division of the profits was made, Smallbones was still confronted with the problem of protecting his earnings from the might of Strongarm, and Strongarm was also confronted with the task of protecting his earnings from the cunning of Smallbones. When they finally got together to talk this over, self-government began; and they learned what the complexity of our modern self-government tends to make us forget, that self-government to be successful must first be individual, that collective self-government by ourselves can persist only when there is individual self-government of one's self. Collective self-government must be in the hands of individuals; they make the laws. The laws, as with Smallbones and Strongarm, are basically agreements to respect each other's rights. When the individuals in whose hands our collective self-government rests, cease to govern themselves and by the craftiness of Smallbones or the might of Strongarm obtain for themselves and their instigators more than their share of what all produce, we have another element of industrial unrest.

The spirit of the law is mutual justice; when the spirit leaves the law, the law is a mummy which does not speak, but which only appears to speak through the cleverness of ventriloquists who have

practiced speaking in the name of the law. When unrest vents itself in revolution, it is the same spirit voicing its cry through the original authors of law, after it has found it impossible to speak through the law itself.

The Three Essential Results of Work

The spirit of the law voiced itself most clearly in the words, "life, liberty, and the pursuit of happiness." Fundamentally a constitution which we might make for our generation would possess the same basic elements as would have met the fair-play agreement of Smallbones and Strongarm and their colleagues in the stone age. The stone age constitution might have read like this:

Article I.—Life

We will hunt together.

We agree to equal opportunity in the chase.

Some there be who are smarter to devise and to direct than others; these shall devise and direct as long as their devising and directing make good hunting. Others there be who are more nimble of muscle than of thought, and who are strong; these shall do the work of nimbleness and strength according to the plan of attack laid down by the leaders.

No trap for getting food shall be hurtful to the strong and nimble ones who build it and who make it work; the reason we build the trap is to lighten the task of getting meat for those who direct and for those who are strong of muscle, also to make the getting surer for all. We will not devise and we will not work on a trap which is hurtful or which does not get all of us more food than the stone hatchet did.

Everybody's male child shall be taught all the tricks of the chase. Those who devise and direct shall see to this.

If a man is killed or crippled in helping to get meat for all of us, his woman shall not have to become one of those who work at the traps; she shall stay in her cave to guard her children, and she shall get her man's share of the meat. Her male children shall be taught all the tricks of the chase also. To do otherwise would later weaken the tribe.

A lazy man and a thief shall be banished into the wilderness.

So much for food, now for shelter.

When we hunted each for himself, every man had skins in his cave against the weather; also he made his cave secure against all his enemies—the storms, the beasts and the prowler. Now that we hunt together, each must have his share of skins; and if some excel at making traps and getting meat and others at securing the cave against enemies, the first shall get of the meat in such share that the second shall be well fed also. Those who devise and direct shall see to this.

We hunt together in order that there shall be more meat and better shelter; else what is the use of hunting together?

Article II.—Liberty

When we hunted alone, each lived as his spirit guided him. Now that we hunt together a common spirit must guide us; for each spirit voices a different command from each other spirit. If each were guided in the chase by his own spirit or tried to follow the guidance of all the spirits, all would be confusion and profitless monkey chatter, and there would be no meat. There must be one spirit on every matter. So in any matter all shall have a say; and the spirit of the work shall be what the most say. This shall be the law and all shall hunt accordingly.

Now, lest unrest destroy the tribe, let those who devise and direct and those who do the heavy work know this: Liberty means equal say in making the law, equal responsibility to the law and equal justice from the law; words are not the law any more than the tongue is the mind. The spirit of each has equally wrought the law. So in return the law shall voice the spirit equally for each.

Article III.—The Pursuit of Happiness

There is no finer fun than hunting. To go forth in the dawn for the day's meat, to expand in the sunshine, or to battle against the storm, to debate with each other the plan of the work, to match with each other in feats of strength and deftness of skill, to return at night with a fair share of day's earnings, to lie steeped in tired ease while the women cook the meat and the children tell the day's trifles—this is what makes a satisfied man. The joy and satisfaction which inhere in the task of getting meat must be preserved; otherwise life will become a heavy and a terrible thing.

So then, since we work together in order that there shall be more meat, better shelter and deeper satisfaction, those who devise and direct shall see to it that the work gives to every man these natural and necessary benefits.

Work makes the spirit of a man; it must not break the spirit of a man. A man with a broken spirit is a menace to the tribe, for the spirit of men makes the law.

The quantity of unrest in a community is in direct proportion to the extent to which these three fundamental principles are being ignored. As a matter of fact these basic concepts are the primal elemental impulses which have pushed mankind forward and upward. Any human cooperative structure which does not rest on them in fact, not in words, is bound to wobble; there will be a scurrying for prop-pers and props. The leader who devises and directs without devising and directing in conformity with these principles is a Frankenstein.

It would appear then that the real test of education's worth to the state is in this: Does education train the leaders to do sound building? There are really two questions here: Does it train the leaders, and does it teach the principles of sound building?

The Leader

The leader emerges from the mass. There is no known rule of heredity for personality, for intrinsic quality. There is a divine right of leadership but it does not descend from father to son; it is conferred in utter disregard of wealth, creed, name, condition or caste,—and it is non-transferable. The personality which creates leadership pushes instinctively above the dead level, above mediocrity; and the fight up through the mass is what gives the leader the strength to supplement personality.

Education and the Leader

The leaders who devise and direct in industry are usually men who left school when they were about fourteen years old and went to work at the bottom. Their schooling has consisted of elementary work in reading, writing and arithmetic. Plunged into the competitive struggle for a living with nothing but their innate resources to fall back upon, their wits were sharpened and their natural gifts of planning for and directing others stood out in bold relief. They advanced step by step acquiring the two main essentials for shop management, a detailed knowledge of practical shop processes and an expertness in handling men. Many of them have become well “educated,” that is well and widely informed and able to think, solely by their own efforts.

It is entirely safe to say that our present system of organized education has had very little influence in the training of those who actually manage the operations in factories, except as it has furnished them material science as a tool of operation. This is not a surprising fact, for the brains and the personality necessary to leadership are just as likely to be born in the alley as on the avenue, and their chances for an accession of strength through overcoming obstacles are greater in the alley than on the avenue. And since the number of men graduating from college is almost a negligible percentum of those who grow up and work, the cause is obvious. So then our formally organized system of education has had little to do with the training of those who devise and direct industrial work. We (in education) do not train the industrial leaders; they are trained by industry itself. There are, of course, the usual exceptions.

The greatest problem confronting a people is the stability of

its civilization. Now it is assumed without argument that the business of education is so to guide the mental processes of the people that they will build safely and permanently. It would seem then that not the least function of education is to train those who by natural gift devise and direct and also to guide the training of those whose lot it is to do the actual physical labor. The problem then is first to search out those whom nature intended for leadership in industry and to train them thoroughly in the three principles of sound building, and second to instill into those who labor an appreciation of these three principles as well as to ensure for them skill in their daily tasks.

Now, since the leader emerges from the mass, and since he gives evidence of his leadership in industry rather than in the school, it is evident that education must seek some connection with industry to obtain him; and since the detailed knowledge of practical affairs **essential** to industrial management can be obtained only under industrial conditions, the further need of a tie between education and industry is evident. Industry and education must work together, therefore, to meet the problem of industrial unrest, and each has its separate but coordinated functions. Industry through the competitive processes in its daily tasks searches out the leader and gives him his practical training. Education implants in him the three fundamental principles of sound building, together with the necessary material sciences of his profession. Further, the need of this tie between education and industry is imperative, since bread and butter necessities and parental misguidance drive thousands to work at an early age.

Education and Industry

An effort is being made in Cincinnati to evolve out of the old school processes both in the public school and in the university a system of industrial education which will meet squarely the basic problems of the life of an industrial community. A description of the work which has been done and which is contemplated will probably exemplify these theories of education more clearly than the constructive argument which led to their adoption.

Seven years ago the Engineering College of the University of Cincinnati deliberately set about to install a scheme for training men for the higher positions in industry, by entering into a cooperative arrangement with the industrial plants of the city. The scheme is very simple. The students alternate weekly or bi-weekly between

the university and the industries, and are divided into two sections alternating with each other, so that the shop and the university are always full-manned. In this agreement the functions of the university and of the shops are sharply defined. The shop operates a system of practical training which is approved by the university. This training is designed to bring out the qualities of devising and directing possessed by the students and also to give them the thorough practical knowledge necessary to leadership in production. The university trains the men in the theories underlying the practice and instills as far as possible the fundamental principles of sound production; the university also coordinates the theory and the practice. At this writing the university cooperates on this basis with about seventy-five industrial concerns and has about four hundred students in the course.

When these cooperative engineering courses were safely under way a continuation school for shop apprentices was opened under the direction of the public school authorities. Under the continuation school agreement the manufacturers release their young working people for periods of four to eight hours a week to the public schools for instruction. In most cases the apprentices are paid for the time they are in the school just as if they were at their machines in the shop. It is the function of the teachers of the continuation schools working in conjunction with the factory superintendents to search out the young men and women of ability and to continue them in their instruction to the highest point which their abilities will permit them to attain. The day continuation school courses in conjunction with certain night school courses furnish sufficient credits for entrance to the university.

Under the continuation school plan the school has no authority over the kind of work the young people do in the shops, but the public schools are now inaugurating cooperative courses in which, as in the university, the shop work is planned with the approval of the public school authorities. It will be evident, therefore, that a path is open through all the educational facilities of Cincinnati in continuous and direct contact with industry. At the present time the work does not embrace all the types of industry since thoroughness in organization and operation would not permit so sudden and radical a departure; but gradually the whole plan is being realized.

This brief outline of a constructive movement with certain

specific ends in view is given without tiresome detail to show that the plan here proposed of coordinating education to industry for the material, moral and physical welfare of the people of an industrial community is possible of realization. The further plans contemplate the gradual extension of the university cooperative course to embrace the training of men in all phases of city life where science is used in production or where men work in groups under direction. This contemplates cooperative work with banks, insurance companies, commercial houses, libraries, the city government, general manufacturing business not classed as engineering, railroad and traction companies and public service corporations. At this writing the work has already been extended to the medical school in conjunction with the hospital and the various health agencies of the city, so that the medical practitioner will be a preventive as well as a curative agent. The Engineering College also cooperates with the city's department of public service in the training of municipal experts. A beginning has been made with the traction and railroad companies.

It will be obvious that when the plan is more completely in operation a natural system of selection in education will prevail. Under present conditions universities accept any young man who can present sufficient academic credits from an accredited high school. After they receive him they give him additional academic work for four years. At the conclusion of this period, upon graduation, the young man is sent out to compete with those who have fought their way from the bottom upward. Our own students in their athletics know better than this. They would not tolerate for a moment a physical director who would put them in groups on a grand stand and give them a lecture on the theory of jumping hurdles, at the same time exemplifying this by his own demonstration of hurdle jumping. A team selected on fourteen academic credits and trained four years by a lecture system, and then sent out with a diploma to compete with the youth who had learned how to jump hurdles and to race in the hurly burly competition of the corner lot would hardly do credit to the wisdom of the institution.

Modern industry, like Frankenstein's man, is a powerful machine which lives and grows greater by reason of the injection into its organism of material science. We seem to be at the point of industrial progress where we must control industry or industry will control us.

In building industry we aimed to shape it to our needs; we are in danger now of shaping ourselves to its needs. Hence our unrest. Surely education can perform no greater service to humanity than to seek out men of ability and train them to devise and direct in such a way that life, liberty, and the pursuit of happiness shall be natural results of the day's work.